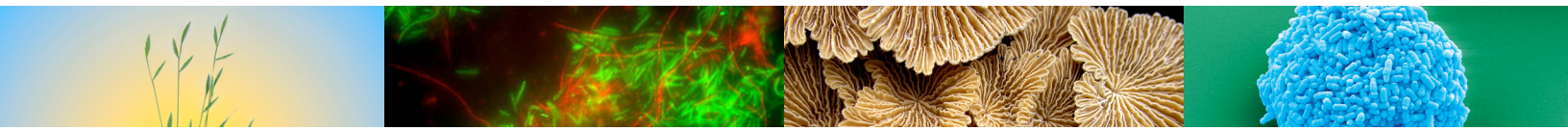
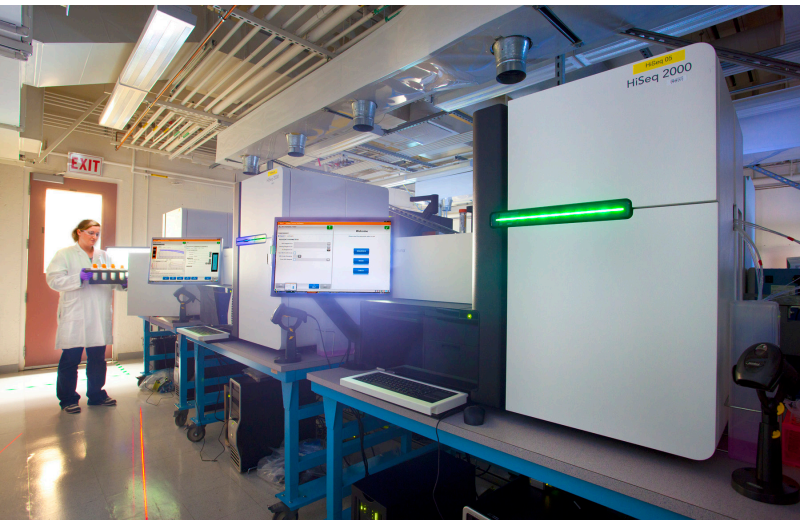
JGI
DOE JOINT GENOME INSTITUTE
US DEPARTMENT OF ENERGY
OFFICE OF SCIENCE

The DOE Joint Genome Institute
Sequencing the world of possibilities for energy and the environment





The U.S. Department of Energy (DOE) Joint Genome Institute (JGI) is the only federally-funded high-throughput genome sequencing and analysis facility dedicated to genomes of non-medical microbes, microbial communities, plants, fungi and other targets relevant to DOE missions in energy, climate, and environment. DOE JGI provides collaborators around the world with access to massive-scale DNA sequencing to underpin modern systems biology research and provide fundamental data on key genes that may link to biological functions, including microbial metabolic pathways and enzymes that are used to generate fuel molecules, affect plant biomass formation, degrade contaminants, or capture CO_2. The information can then be used to optimize organisms for biofuels production and other DOE missions.

Located in Walnut Creek, California, and supported by the DOE Office of Science, DOE JGI is managed by Lawrence Berkeley National Laboratory, drawing additional complementary capabilities from its partner laboratories: Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, and the HudsonAlpha Institute for Biotechnology.

Among the DOE JGI's largest customers are the DOE Bioenergy Research Centers, which were established to accelerate basic research in the development of next-generation cellulosic and other biofuels through focused efforts on biomass improvement, biomass degradation, and strategies for fuels production.

Bioenergy

Projects focus on developing plants that can be used as feedstocks for biofuel production, identifying organisms (e.g. fungi and microbes) with enzymes and pathways that can break down the lignin and cellulose in plant cell walls, and characterizing enzymes and pathways that can ferment sugars into biofuels.

Carbon Cycle

As microbes make up the largest component of the Earth's biodiversity, understanding how they metabolize carbon, and how environmental changes affect these processes, is crucial for the development of better predictive models for reducing the effects of increasing carbon dioxide emissions on the global climate.

Biogeochemistry

The field of biogeochemistry explores the full spectrum of biological, physical, geological and chemical processes and reactions involved in sustaining life on Earth. One area of emphasis targets microbes and microbial communities (or metagenomes) that can degrade or otherwise transform environmental contaminants such as toxic chemicals or heavy metals.

JGI FACTS

>1,800 Users Worldwide—Individual Principal Investigators, Collaborators and Annotators (who conduct genome analysis) on active projects

>1,100 US Users

>150 JGI-authored publications per year

$69 M budget from DOE Office of Science, Office of Biological and Environmental Research

250 staff

80,000 square foot headquarters

http://www.jgi.doe.gov/